

One issue that may affect social impacts in the future is trends among existing and potential uses. For many recreation activities, past use may be a relatively good predictor of future use. However, some activities may be in developing or declining trends, in which case factors such as population growth, economy, availability of nearby alternatives, free time, weather etc. should be considered (Whittaker and Shelby 2007). Whittaker and Shelby (2007) provide some insight into trends for existing and potential recreation uses on the Chattooga:

- *Frontcountry and backcountry angling:* Nationally, projections show fishing participation is likely to grow, but not keep pace with population growth. However, individual segments of the Chattooga, particularly the delayed-harvest section, established in 2000, have probably seen increased use and are candidates for more growth in the future. Angling trends on the Chattooga also depend on stocking and regulation stability. Major changes in current stocking levels or regulation changes that favor one type of fishing over another would probably affect future use (Whittaker and Shelby 2007).
- *Backpacking:* Nationally, backpacking use appears to be flat or declining. However, participation projections estimate that backpacking in the South will increase about 23% by 2020, which would be less than the population increase (Whittaker and Shelby 2007). As a result, backpacking use may not grow as fast as other uses in the future.
- *Day Hiking:* Nationally, day hiking appears to be increasing at or slightly faster than the population rate. Participation projections estimate that hiking in the South will increase by about 48% by 2020 (Whittaker and Shelby 2007). Day hiking is most likely to see substantial increases relative to other uses.
- *Whitewater Boating:* According to a recent survey, whitewater kayaking saw growth in the mid- to late-1990s, but that growth has flattened in recent years. Use data from the lower Chattooga indicates considerably higher use in the late 1990s, with a drop-off in the first part of this decade (possibly explained by several recent low-water years) (Whittaker and Shelby 2007). Growth in whitewater boating is not as certain when compared to the likely increase in day hiking.
- *Scenic boating:* Scenic floating has grown considerably since 1998; however, use of Sections I and II on the lower Chattooga (which features scenic floating) has generally declined from peaks in the mid-1990s (Whittaker and Shelby 2007). As with whitewater boating, growth in scenic boating is not as certain when compared to the likely increase in day hiking.

Another issue that affects social impacts from different recreation uses focuses on flow levels. Studies from many rivers show that different activities may be optimal and much more likely to occur at certain flows than others. In many cases, for example, whitewater boating occurs at higher flows (when the waves are larger and the hydraulics are more powerful) than wading-based angling (because it is easier to wade and cross the river at lower flows). Whittaker and Shelby (2007) describes acceptable and optimal flows for different kinds of boating and angling

opportunities, documenting when flows are better for one activity (and not the other), as well as when flow ranges for these activities overlap. The report provides greater detail about these flow ranges for different opportunities and segments, but overall suggests that the highest quality fishing and boating generally occur in different parts of the hydrograph (the exception is bait fishing, which remains optimal through higher flows).

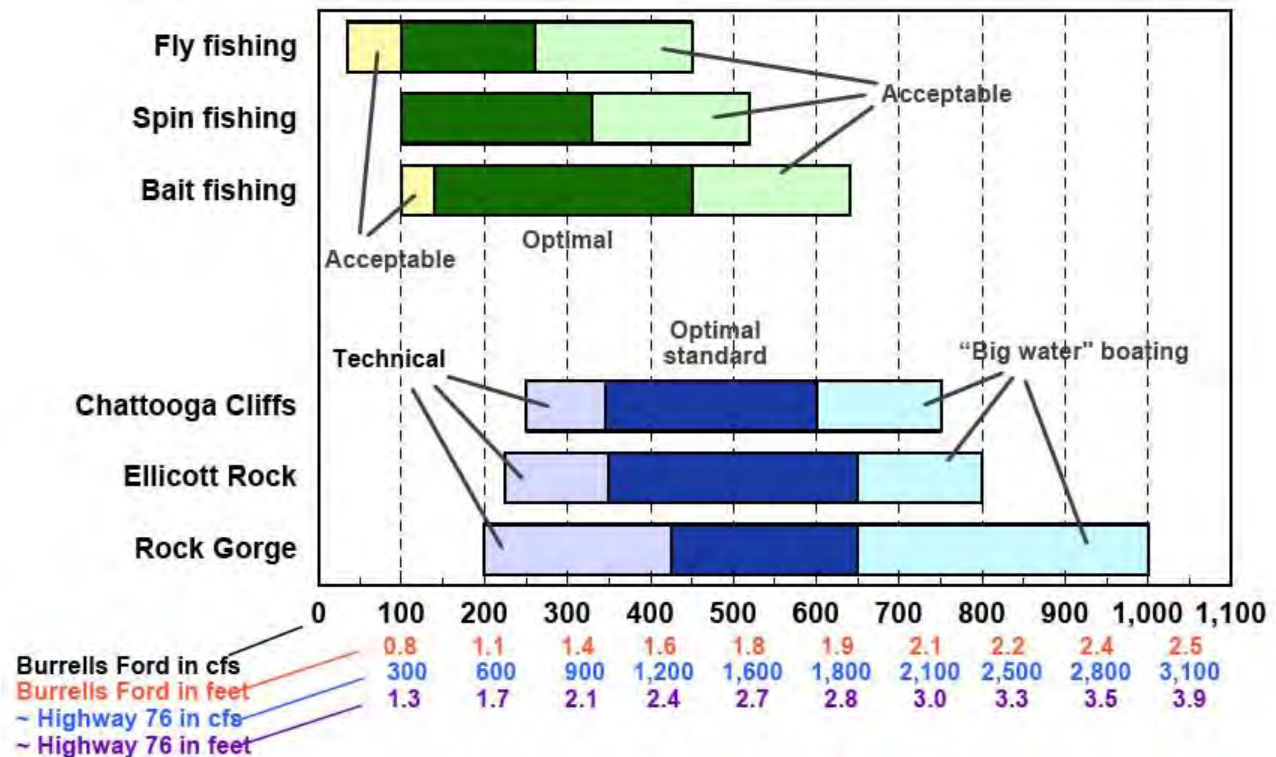
However, Whittaker and Shelby (2007) also documents that acceptable but lower quality fishing opportunities would overlap with optimal boating and acceptable but lower quality technical boating would overlap with optimal fishing. At these overlap flows, some users of each group could be present (if boating were allowed) and encounters could create impacts and conflict.

The only overlap between optimal boating and optimal fishing is for bait fishing, which is more likely to occur at higher flows than wading-based fly or spin fishing. However, Whittaker and Shelby (2007) also suggests that bait anglers are more likely to be frontcountry users, may be more focused on harvesting fish than a social setting, and may have higher use levels during frontcountry stocking season (generally focused on summer). Higher flows are more likely in winter and spring.

Table 3.3-3 shows “flow range bars” for fishing and boating opportunities on the upper Chattooga. This analysis of flow levels and recreation opportunities forms the basis for estimates of the number of days with potential interaction between boaters and other users in the alternatives that allow additional boating in the Chattooga corridor. However, such analyses also apply additional estimates about the number of days that boaters are likely to actually use such flows (because they may be of short duration, are difficult to predict, may occur on weekdays when boaters are working, on days with poor weather or at night).

Analyses of interactions between boaters and other users also consider the timing of use. Because anglers spend most of their time near the river and usually fish in a small segment of the stream, they are likely to be passed by nearly all the boaters using the segment on that day. However, the timing of both activities on the river can impact the number of encounters. Angler/boater encounters are more likely to occur in the winter months (December through February) when both groups are on the river in the middle of the day. As the weather warms by mid-March and April, boating concentrated in the middle of the day would likely produce relatively fewer boater/angler encounters as anglers are more likely to fish in the early morning before temperatures rise (Whittaker and Shelby 2007).

Table 3.3-3 Shows “Flow Range Bars” For Fishing And Boating Opportunities On The Upper Chattooga (Whittaker And Shelby 2007)



This section of the EA examines the impacts of the proposed alternatives on three related social science issues:

- Social carrying capacity/solitude which is chiefly focused on overall encounter levels, particularly on-trail and on-river encounters, but also includes competition for resources;
- Conflict, which has two components—face-to-face conflict as represented by specific types of encounters; and goal interference impacts as represented by the presence or absence of boating segments; and
- Recreation opportunities.

Major sources for this section include Whittaker and Shelby (2007) and information gathered at public meetings, at a public hearing and during the scoping process.

Social Carrying Capacity/Solitude Definitions and Background:

For the purposes of this analysis, *social carrying capacity* is addressed indirectly by establishing encounter limits for different reaches and areas on the upper Chattooga, monitoring whether actual encounters exceed those limits, and taking adaptive management actions to reduce encounters to acceptable levels as necessary. Action alternatives in this analysis (alternatives 2-10) vary encounter limits by river segments, and these differences thus vary social capacities (although Alternative 1, current management, offers no encounter limits or capacities).

Solitude refers to 1) the state of being or living alone; seclusion; 2) remoteness from habitations, as of a place; absence of human activity; and 3) a lonely, unfrequented place (*Dictionary.com Unabridged* (v 1.1)). Information from the public indicates that solitude is one of the most valued, if not *the* most valued quality of the recreation experience in the upper Chattooga corridor. Solitude is also one component of the Chattooga River's recreation ORV and also part of the "outstanding opportunities for solitude" goal in the Wilderness Act.

Action alternatives in this analysis (alternatives 2-10) offer different amounts and types of recreation opportunities (e.g. hiking, camping, angling, boating) and different encounter limits (that define acceptable levels of impacts), but all maintain outstanding opportunities for solitude in the Ellicott Rock Wilderness (Wilderness Act) and the upper Chattooga as a whole, and protect and enhance high quality recreation experiences (including opportunities to experience outstanding natural environments, challenge, solitude, etc.) that are part of the recreation ORV (Wild and Scenic Rivers Act). Additionally, all action alternatives in this analysis protect and enhance the river's free-flowing condition, water quality, and the non-recreation ORVs (Wild and Scenic Rivers Act).

Encounters refer to contact (sight or sound) between groups or individuals and can be distinguished by user types (e.g., anglers-boaters, hikers-anglers, swimmers-boaters), timing (e.g., season, weekend/weekdays) and location (e.g., on river, on trails, in camps or at attraction sites). Encounters are a common social impact indicator for backcountry settings and have received considerable attention in recreation literature. They are one of the most important indicators of solitude in backcountry areas like the upper Chattooga River corridor (Whittaker and Shelby 2007).

For the purposes of this analysis, *backcountry encounters* refer to encounters that occur more than ¼ mile from roads or bridges.

Trail encounters are experienced along the trail (e.g. hikers/hikers, hikers/anglers, hikers/boaters) and are particularly relevant in backcountry areas. These encounters can include trail users that see or hear a group that is on the river if the trail has a view or is in close proximity of the river (e.g.: a group of boaters or swimmers seen or heard from the trail). Trail encounters do not include encounters users may experience while fishing, swimming or participating in other on- or in-river activities (this analysis defines those as "on-river encounters").

On-river encounters occur while users are on or in the river itself. As with on-trail encounters, on-river encounters (e.g., anglers/anglers, anglers/swimmers, boaters/boaters, boaters/swimmers) are an issue in backcountry areas.

Competition involves contention for potentially scarce resources. Competition for campsites or fishable water is a common example. Three potential competition indicators on the upper Chattooga include percent of fishing areas passed because they are occupied; percent of campsites passed because they are occupied; and percent of camps occupied per segment (Whittaker and Shelby 2007).

Studies in wilderness and backcountry settings show that users agree encounter levels should be low. In general, encounter tolerances in wilderness are about four–five per day, while less primitive backcountry experiences are higher, but usually less than ten encounters per day. However, the effect of encounters varies for different users. Some are more solitude-seeking and, therefore sensitive to encounters, while others are more gregarious, even in wilderness-like settings (Whittaker and Shelby 2007).

The impact of encounters between trail users and boaters (if boating were allowed) is likely to vary, depending upon when and where the encounter occurs and the individual tolerances of the parties involved. Many of these encounters may have similar effects to trail encounters with other land-based users although they could be more adverse for some individual boaters or hikers (Whittaker and Shelby 2007).

Public comments and Forest Service studies have shown that angler/boater encounters are among the most important impacts associated with allowing boating on the upper Chattooga (Whittaker and Shelby 2007). Studies indicate that anglers can be very sensitive to this impact, more so than boaters. When one group (anglers) is more sensitive to the impacts of another group (boaters), but not the reverse, the impact is described as “asymmetric.”

Current information on the existing condition of backcountry encounters for all sections of the river was not available for this analysis. However, the results of the Use Estimation Workshop (Berger and CRC 2007) were used to estimate the average and peak use levels in the upper river corridor. In addition, averages from Rutlin (1995) and assumptions about existing rates and use-encounter relationships were applied to the Use Estimation Workshop results to develop encounter estimates for existing users (see Appendix D).

For the alternatives which provide additional boating opportunities on the main stem Chattooga River, estimates of backcountry use and on-trail and on-river encounters attributed to boating were developed by using the assumptions in the “Estimating Potential Whitewater Boating Use” section of Whittaker and Shelby (2007), as well as assumptions in the Encounter Calculation working papers in the project files (see Appendix D). Although encounters with boaters or groups of boaters may fluctuate throughout the year depending on geography, weather conditions, timing, season and flow levels, etc., the above referenced working papers assume that an average of 75 percent of all boating groups floating a specific stretch on a particular day (independent of season or flow level) will be encountered by on-river recreationists such as anglers. Similarly, a percentage of all boating groups equal to the percentage of trails within 100 feet of the river are assumed to be seen or heard by on-trail users.

In this analysis, the average number and range of “boatable” days (the days that boaters are predicted to actually float the river over the course of an average year based on water flow levels – see Table 3.3-3 – and the “Estimating potential whitewater boating use” section in Whittaker and Shelby 2007) were derived by using the “mean daily flow” method. For example, in Alternative 4, a mean daily flow of approximately 450 cfs was established as the lower limit for boaters to float the river. According to 67 years of data, there is an average of six “boatable days” per year between December 1 and March 1 at flows of 450 cfs or higher.

In addition to encounters, biophysical attributes and impacts can influence perceptions of solitude and the quality of the recreation experience. The condition of trails, whether official or user created, can impact user perceptions of solitude and remoteness by their width, clearing limits, condition, location, density, etc. Similarly, campsites can affect user perceptions by their size, amount of bare ground, condition, distribution, etc. User-created trails may form if boating is allowed on the upper Chattooga because of “attraction” sites unique to boating, increased hemlock mortality, and the agency’s policy of not removing LWD to accommodate recreation within the river or stream banks (alternatives 4-10). However, new user-created trails solely associated with boating are expected to be minimal, and should therefore only minimally influence the perception of remoteness and solitude when compared to existing biophysical impacts. The increase in LWD, however, particularly in the Chattooga Cliffs and Ellicott Rock reaches where the most hemlock mortality is expected to occur, could impact the boating experience and make it less desirable.

Regardless, the biophysical impacts are not typically addressed through use/encounter limits, but through “technical fixes” (e.g.: campsite hardening/rehabilitation/obliteration, trail reconstruction/realignment/obliteration, etc.) or through education and regulation (Whittaker and Shelby 2007). All action alternatives in this proposal incorporate some of the above management actions to mitigate biophysical impacts to perceptions of solitude and remoteness.

Existing Condition of Social Carrying Capacity/Solitude: Based on existing use estimates and the above assumptions, the number of encounters currently occurring in the upper Chattooga on some days, especially in the wilderness, exceeds the threshold that typically defines solitude in wilderness and primitive backcountry settings. This is especially the case on weekends in the spring, summer and fall in most sections. In addition, the public has indicated that the condition and location of some user-created trails and user-created campsites is unsightly. All of these issues are affecting the sense of solitude on the upper Chattooga.

Tables 3.3-4 and 3.3-5 depict the estimated number of current backcountry encounters by reach on the upper river.

Section 3.3.1 Recreation

Table 3.3-4. Estimates Of Existing Trail Encounter Levels Per Day In Backcountry Areas By Reach

Reach	Season	Encounters Per Day			
		< = 3	4 - 7	8 - 10	> 10
Chattooga Cliffs (wild and recreational area)					
	Dec-Feb	Most days			
	Mar-May	Most days			
	June-Aug	Most days	Some weekends		
	Sept-Nov	Most days	Some weekends		
Ellicott Rock (wild area)					
	Dec-Feb	Most days			
	Mar-May	Most weekdays	Most weekends	Some weekends	
	June-Aug	Some weekdays	Most weekdays	Most weekends	Some weekends
	Sept-Nov	Most weekdays	Most weekends	Some weekends	
Rock Gorge (wild area)					
	Dec-Feb	Most days			
	Mar-May	Some weekdays	Most days	Some weekends	
	June-Aug		Some weekdays	Some weekdays	Most weekends
	Sept-Nov	Some weekdays	Most days	Some weekends	
Nicholson Fields (recreational and wild area)					
	Dec-Feb	Most weekdays	Most weekends	Some weekends	
	Mar-May	Some weekdays	Most weekdays	Some weekends	Most weekends
	June-Aug		Some weekdays	Some weekdays	Most weekends
	Sept-Nov		Most weekdays	Most weekends	Some weekends

Table 3.3-5. Estimates of Existing On-River Encounters per Day in Backcountry Areas by Reach

Reach	Season	Encounters Per Day			
		< = 3	4 - 7	8 - 10	> 10
Chattooga Cliffs					
	Dec-Feb	Most days			
	Mar-May	Most days			
	June-Aug	Most days			
	Sept-Nov	Most days			
Ellicott Rock					
	Dec-Feb	Most days			
	Mar-May	Most days			
	June-Aug	Most days			
	Sept-Nov	Most days			
Rock Gorge					
	Dec-Feb	Most days			
	Mar-May	Most days			
	June-Aug	Most days			
	Sept-Nov	Most days			
Nicholson Fields					
	Dec-Feb	Most weekdays	Most weekends		
	Mar-May	Most weekdays	Most weekends	Some weekends	
	June-Aug	Most days			
	Sept-Nov	Most weekdays	Some weekends	Some weekends	

Use levels can also impact competition for resources. Currently, fishing competition is probably an issue at the frontcountry fisheries at Burrells Ford and Highway 28 during stocking season and for the Nicholson Fields reach during delayed-harvest season. Probably less than 20 percent of fishing areas in the backcountry are passed because they are occupied (Whittaker and Shelby 2007).

Evidence suggests that current competition for parking spaces may occur in busy summer and fall color season at parking areas for Sliding Rock, Nicholson Fields (the delayed-harvest reach) and at Burrells Ford (Whittaker and Shelby 2007).

Approximately 70 backcountry camps exist in the upper Chattooga, excluding the 30 camps at Burrells Ford. Total overnight use probably does not exceed 25 groups at one time on peak weekends, producing an approximate 35 percent occupancy rate. However, this campsite occupancy rate does not necessarily correlate with low campsite competition because the number of “desirable sites” is less than the total number of sites. On the upper Chattooga, some higher quality sites exist near good swimming/relaxing beaches or at a “popular” distance from trailheads. At least one large camping area with multiple sites exists at the confluence of East Fork. Trade-offs probably exist between having a good site and camp encounters but no study has specifically addressed these impacts for the Chattooga.

Conflict Definitions and Background:

Conflict implies an incompatibility between two or more recreation activities. Some conflicts are “zero tolerance” for another group’s activity or behavior while others are multi-faceted and may allow some level of contact or impact.

Social values conflict does not require contact in the resource setting. The sensitive group simply does not agree an activity is appropriate in certain settings (e.g., motorized use in a wilderness area) and opposes it even if they never encounter such use (e.g., when it occurs in the off season). Social values conflicts are often more challenging to address through separation of uses by space or time or educating users on how to minimize conflict behavior.

Goal interference occurs when the behavior of one group prevents another from achieving its goals. Contact can be direct while in the resource setting itself, such as when a rafter encounters a motorized boat, or indirect, such as when a skier sees a track left by a snowmobile. It can also occur between groups involved in the same activity such as interactions between loud vs. quiet campers. Goal interference is one commonly cited explanation for recreation use conflicts (Jacob and Schreyer 1980), and may occur even between groups sharing the same goals (Whittaker and Shelby 2007).

Face-to-face conflict can occur when two users/groups encounter one another in the resource setting itself, particularly if one group blocks the other from achieving its goals. This conflict, as well as the goal interference that might have led to it, can often be mitigated by separating strategies, such as flow or season restrictions.

Asymmetrical conflict occurs when group A reports adverse impacts from group B, but not the converse (i.e. the goals of one are interfered with, but not the other). As conflicts escalate, however, it is common for group B to develop antipathy toward group A. “Asymmetrical antipathy” explains why the non-sensitive group may be willing to share the resource while the sensitive group may not. In such cases, sharing does not have the same consequence for each group (Whittaker and Shelby 2007).

Section 3.3.1 Recreation

As documented previously, boating has been absent on the upper Chattooga for 30 years, creating a “place attachment” unique to the upper Chattooga (no boating, outstanding trout fishing), as well as a “place attachment” unique to the lower Chattooga (nationally recognized boating challenge). Boating was rare on the river even before 1976, so the current baseline setting is based on the absence of boating. Not surprisingly, some users support the status quo and are resistant to changes in it. For these users, any boating may represent a problem. They consider the 1976 boating closure a “compromise solution” that would be eroded by additional boating of any sort (Whittaker and Shelby 2007).

Research on conflicts has looked at a variety of issues that may be at the root of the conflict, but they tend to obscure the more central issue, which is the nature of contrasting experiences in conflicts. If a sensitive group feels that another use decreases the quality of their experience, it is important to understand whether a primary impact is to blame, or a more global objection. If two activities are incompatible and both are to be provided, zoning options that equitably share the resource (perhaps capitalizing on natural use patterns) are usually the best solution (Whittaker and Shelby 2007).

For example, anglers may experience goal interference from boaters when they are forced to move out of the boater’s path (themselves or their lines). “Making anglers move” is a social impact which is related to several variables: characteristics of the location (e.g., river width, where anglers are fishing, space for boaters to pass); tackle (e.g., spinning gear, which has a longer “range”); behavior of anglers (e.g., wading into the channel vs. fishing from the bank); and behavior of boaters (whether they know and take the “path of least disturbance” or whether the line of descent dictates their path). Boaters may also interfere with anglers’ goals when the number, behavior or frequency of boaters disturbs fish which, in turn, may affect fishing success (Whittaker and Shelby 2007).

The physical characteristics of each individual reach, the flow levels at which boating occurs or is allowed, the location of trails along the river, and other factors (e.g. stocking or lack thereof) can work independently or collectively to determine whether boater interference with angling occurs. For example, the Chattooga Cliffs reach is the narrowest of the four reaches on the upper Chattooga; therefore, interactions between boaters and anglers might be expected to cause interference. However, the potential for interference would likely diminish during periods of higher flow, since high flows are less favorable for angling and more favorable for boating. Travel within the stream channel on foot is difficult at best during high flow periods, often necessitating an overland hike for anglers who wish to fish more than one location.

In the Ellicott Rock reach, the stretch from Bull Pen Bridge downstream to the Ellicott Rock marker is narrow but not heavily fished, probably because there are no trails along the river providing easy access. Stocking does not occur there and both the river gradient and surrounding terrain are steep, making it a difficult area to fish, particularly during high water. The stretch from the Ellicott Rock marker downstream to Burrells Ford has a trail along the eastern side of the river making it more accessible. The river is also wider and the gradient is not so steep. The latter could compensate for the former thereby allowing boaters to give anglers some space while passing and potentially mitigate interference. This section is more heavily fished than the Chattooga Cliffs reach, especially below the East Fork confluence.

The Rock Gorge reach downstream to the Big Bend area is similar to the Ellicott Rock reach below the Ellicott Rock marker in terms of gradient, width and access. It is easily accessible by the Chattooga Trail on the east bank and a user-created trail on a portion of the west bank. Because this reach is stocked, the fishing pressure is relatively high here, higher than in both the Chattooga Cliffs and Ellicott Rock reaches. Again, the wider channel and easier gradient may serve to help mitigate interference in a popular and easily accessible fishing reach. The steeper gradients starting at Big Bend Falls to about half way down the Rock Gorge reach and extending through the Rock Gorge itself tend to be difficult to fish during higher boatable flows, and therefore would naturally present less opportunity for interference.

Information from the public indicates that some swimmers anticipate goal interference from boaters if they are forced to move for safety reasons. However, this interference is likely to be rare, particularly at lower flows that most whitewater boaters would not use. It could be eliminated completely at popular swimming holes through education efforts or site-specific boating restrictions. This interference may be more likely should scenic boating occur on the upper Chattooga, although Whittaker and Shelby (2007) suggests that scenic boating is likely to be very rare due to access problems.

Public comments also indicate that some existing users believe an encounter with a boater or group of boaters would interfere with their solitude or boat-free experience. Conversely, many boaters have indicated that their goal of floating the upper Chattooga has been foregone because they are not allowed to float the river.

Existing Condition of Conflict:

As documented by Whittaker and Shelby (2007) there are use conflict issues on the upper Chattooga among existing and potential user groups. These conflicting issues were equally evident during public meetings, public scoping and a public hearing, in Web articles and on message boards. For some individuals, the conflict appears to be fundamentally “values-based” – they believe that boating is an inappropriate use on the upper Chattooga whether or not they encounter boaters; they have a zero tolerance for boating and feel that some part of their “sanctuary” would be lost by the addition of boating. For others, the conflict focuses on the expectation of encounters and goal interference if boating were allowed. These individuals might be willing to accommodate some boating but they want that use to occur when they are not using the river (or they want that use to be very low).

The face-to-face conflict is expected to be largely asymmetrical in nature. Backcountry anglers as a user group, for example, are likely to be more concerned about boater encounters (expecting goal interference from boating activity) than boaters as a user group might be about encounters with anglers. Such asymmetry is common with user conflicts. However, as the perceived conflict has escalated, boaters have also developed antipathy toward those who oppose boating, thus creating conflict for the boaters as well. One group opposes additional boating opportunities while the other feels it is being unfairly excluded from the upper reaches of the river. The conflict between existing users, as well as potential users, is tangible and may exist to a greater extent on the Chattooga than it does on other rivers. This is because non-boating groups have

developed a “place attachment” to the area over the last 30 years that does not include boats. Conversely, boaters have developed an antipathy towards various existing users and land managers, the perception being that they are unfairly excluded from the use of the upper river.

Currently, goal interference, and the resulting face to face conflict between existing users and boaters, is mostly “perceived” as there is no on-the-ground mixing of these uses. Conversely, opportunities foregone for boaters, along with the associated conflict, are very real.

Recreation Opportunities Definition and Background:

For the purposes of this analysis, *recreation opportunities* are those recreational activities and experiences provided in the nature based setting that is the upper Chattooga River corridor. The proposed alternatives provide a mix of recreation opportunities (types and amounts) consistent with protecting the recreation ORV while, at the same time, protecting other values (free-flow, water quality and nonrecreation ORVs), and ensuring an “enduring resource of wilderness” in the Ellicott Rock Wilderness.

Existing Condition of Recreation Opportunities:

Currently, existing users are able to experience their desired recreation opportunity on the upper Chattooga whether they seek solitude, campsites near the water, a variety of hiking trails, fishing opportunities, or just an opportunity to enjoy the river environment, all without the possible interference from boats. However, boaters are unable to experience their desired recreation opportunity on the upper Chattooga because they currently are not allowed to legally float the river.

ENVIRONMENTAL CONSEQUENCES

Alternative 1

Direct and Indirect Effects

Social Carrying Capacity/Solitude: Current management on all three national forests in the upper Chattooga has no encounter limits except those established for the North Carolina portion of the Ellicott Rock Wilderness in the Nantahala National Forest Plan. However, from empirical observation the agency knows that North Carolina has the lowest use in the Ellicott Rock Wilderness and therefore encounter limits are not likely being reached or exceeded. Appendix D makes assumptions and estimates about encounter levels likely under Alternative 1 and the other seven action alternatives.

Backcountry encounters in this alternative are the same as under the Existing Condition. The solitude experience of existing backcountry users is already being diminished during certain times of the year and in certain locations which may have caused some users to change the timing of their activities to lower use times of the week/season/year or may have entirely displaced some users from the river. Given the information on future trends among existing and

potential uses, encounters in this alternative are likely to increase over time since no encounter limits have been prescribed.

The number of campsite encounters is likely to decrease from existing levels under this alternative because existing management includes implementation of forest wide Standard 81 in the Sumter LRMP. When implemented, it will rehabilitate and close all backcountry dispersed campsites within 50 feet of the Chattooga River and its tributaries in South Carolina. Replacement campsites will likely be constructed outside the 50-foot zone but they will be fewer in number and positioned farther from each other. Under this alternative, competition for campsites may increase if user demand is not met due to the agency closing campsites and decreasing the overall number of campsites throughout the upper river corridor.

Trails are managed in accordance with direction in the three forest plans, none of which emphasize a trail system that is designed to enhance solitude.

Competition for fishable water and parking in this alternative is the same as under the Existing Condition. Given future use trend information, competition for fishable water is likely to increase under this alternative, particularly in the Nicholson Fields reach.

Conflict: Current management would likely result, at least for a time, in an escalation of boater antipathy toward those who oppose boating on the upper Chattooga because of the opportunities foregone for this user group. The expectation of goal interference and the resulting face-to-face conflict for anglers and other existing users would disappear under this alternative because boaters would not be allowed on the upper river. The social values conflict for those who believe that boating is an inappropriate use on the upper Chattooga would also be resolved.

Recreation Opportunities: Recreation opportunities are the same as under the Existing Condition section. No boating would be allowed, while all other existing uses would continue to be permitted. Closing campsites within 50 feet of the river and decreasing their overall number throughout the corridor may result in less recreation opportunities for users wishing to camp.

Cumulative Effects

The vast majority of the recreational effects are direct/indirect as described above. There will be no cumulative adverse effects on boaters or cumulative beneficial effects on existing users from a year-round boating exclusion above Highway 28 because no other rivers exist in the region where boating is prohibited in this manner.

Alternative 2

Direct and Indirect Effects

Under Alternative 2 encounter limits are established to help address social carrying capacity on the upper Chattooga. The encounter limits would be implemented through a permit system that limits encounters to three in the upper three reaches and six in the Nicholson Fields reach (along with the reduction in trail and campsite density) that would in turn serve to more closely align

these areas to the wilderness and remote backcountry preferences described in the literature (Whittaker and Shelby 2007). Based on empirical observation as well as the Use Estimation Workshop results (Berger and CRC 2007), the above encounter limits are predicted to lower use and encounters from current levels in the upper Chattooga River corridor. The permit system would require administrative effort, require users to plan ahead and compete for limited permits, and would displace some proportion of existing use on high-use days. This alternative fundamentally trades off increased bureaucracy for users (and some loss of access at high-use times) to provide higher quality (lower density and greater solitude) experiences. The latter separation of uses is important to preserve the unique year-round backcountry angling opportunities on the upper Chattooga, an important component of which is on-river solitude.

Social Carrying Capacity/Solitude: Opportunities to experience solitude are greater under this alternative than in Alternative 1 because of reduced encounter levels. Solitude for existing backcountry users who are able to obtain a permit would be enhanced during the highest use times of the year. Wilderness character and “outstanding opportunities for solitude” would also be enhanced, both critical ingredients for a unique backcountry angling experience on the river.

In Alternative 2, a limited number of existing users would have access to the trails and river year round. Use may shift into lower use times more quickly than under Alternative 1. In the upper three reaches, the permit system would probably displace some users on most weekends March - October and on most summer weekdays (fewer days in the Chattooga Cliffs reach where use is lower; more days in the Rock Gorge where use is higher). In the Nicholson Fields reach, users will probably be displaced on weekend days March - December and most weekdays April - August (Berger and CRC 2007).

Encounter Limits by Reach:

Chattooga Cliffs Reach: Encounters may be slightly reduced by this alternative but the decrease is likely to be small. The agency will likely need to limit the number of permits on weekends June - August and October and on some weekdays in July, August and October, when encounter levels are already estimated to be higher than three (Berger and CRC 2007). Requiring designated campsites to be at least ¼ mile apart is not expected to alter encounter levels significantly because the three existing dispersed campsites here are already well spaced and backpacking use is low (Berger and CRC 2007).

Ellicott Rock Reach: Existing encounters appear to be higher than three per day on most weekends March - October and most weekdays June - August (Berger and CRC 2007). Therefore, some users are expected to be displaced during these times due to the permit requirement. Campsite restrictions would lower campsite encounters in this stretch and would enhance the wilderness character of the Ellicott Rock Wilderness, as well as enhance solitude in the wild segment of the river.

Elimination of roadside parking at Burrells Ford (between the Ellicott Rock and Rock Gorge reaches), coupled with enforcement, would have minimal impacts on encounters in the backcountry.

Rock Gorge Reach: Current encounter levels here are estimated to be higher than three; therefore, some users are expected to be displaced on most weekends March - October and most weekdays April - October (Berger and CRC 2007). In addition, use may start to shift into the lower-use seasons. Campsite restrictions would lower campsite encounters in this reach and would enhance solitude of the wild segment of the river by limiting additional development and access.

Nicholson Fields Reach: Implementation of this alternative is expected to result in displaced users on weekends March – December and on most weekdays April - August (Berger and CRC 2007). New campsite restrictions in this alternative would lower campsite encounters.

Reduction of campsite density; the requirement to camp at designated sites by reservation only; and rehabilitation of remaining campsites so that they are in better condition, conform to the landscape and are environmentally sustainable will help to enhance perceptions of solitude and to protect the wilderness character and recreation ORV. Competition for campsites may decrease due to lower numbers of users, or could remain an issue because fewer legal campsites will be available (one per ¼ mile of river).

This alternative emphasizes a designated trail system designed to mitigate encounters and enhance solitude. Fewer trails which are in better condition, conform better to the landscape, and are environmentally sustainable will help enhance perceptions of solitude.

Because of the stringent encounter levels and limited permits in this alternative, competition for fishable water in the Nicholson Fields reach during the delayed-harvest season should be reduced, although fishing opportunities would also be reduced. Lower use numbers should similarly reduce competition for parking as well as, potentially, for campsites. Competition for the limited number of backcountry permits during the high-use times of the year where encounters already exceed limits would likely increase over time given recreation trends.

Conflict: Goal interference for existing users and opportunities foregone for boaters, along with the resulting conflict, are the same as Alternative 1.

Recreation Opportunities: Recreation opportunities, or lack thereof, are the same for boaters and existing users as Alternative 1; however, the permit system is likely to decrease recreation opportunities for some existing users. Also, recreation use trend information suggests that demand for these permits will increase over time, either resulting in less recreation opportunities for those unable to secure a permit or use/demand shifting into the lower-use seasons (e.g. winter months) spreading use/demand more evenly over the course of the year.

Cumulative Effects

Cumulative effects are the same as in Alternative 1.

Alternative 3

Direct and Indirect Effects

This alternative maintains current encounter levels in the upper Chattooga River corridor in the future (see Tables 3.3-4 and 3.3-5), a contrast to Alternative 2 where encounter levels are reduced. It addresses social carrying capacity by establishing encounter limits and a monitoring program that initiates adaptive management actions if limits are exceeded. As stated in Appendix B under Implementation and Monitoring Questions, the established encounter limits may be adjusted to reflect actual encounter levels as the agency obtains better information on user dynamics during project implementation and monitoring. However, if use levels rise and associated encounters start to exceed specified limits, actions will be taken to reduce encounters. In addition, this alternative (as with alternatives 1 and 2) maintains a year-round, boat-free recreation experience on the upper Chattooga designed to eliminate potential conflict between boaters and anglers on river. The latter separation of uses is important to preserve the unique, year-round backcountry angling opportunities on the upper Chattooga, an important component of which is on-river solitude.

Social Carrying Capacity/Solitude: In the three lower reaches, most average daily encounters on trails are not expected to exceed the encounter limits except on some weekends May - August and on some weekdays May - August. The Chattooga Cliffs reach should have fewer days where average daily on-trail encounters exceed limits (some weekends May - August and October). On-river encounters in the upper three reaches are low and are not expected to exceed the encounter limits in the foreseeable future. However, on-river encounters in the Nicholson Fields reach are the highest of all four reaches because of the popularity of this delayed harvest stretch among anglers. Encounter limits will likely be exceeded on some weekends March - May and November - December (Berger and CRC 2007).

Encounter Limits by Reach:

Chattooga Cliffs Reach: Average daily encounters on trails are expected to exceed the four-encounter limit on 14 days per year on some weekend days May - August and in October. On-river encounters in the backcountry are not expected to reach the four-encounter limit in the foreseeable future (Berger and CRC 2007).

Ellicott Rock Reach: Average daily encounters on trails are expected to exceed the encounter limit on 36 days per year on some weekend days April - September and on some weekdays June - August. On-river encounters are very low and are not expected to reach the encounter limit in the foreseeable future (Berger and CRC 2007).

The encounter limits established for the Ellicott Rock Wilderness are slightly higher than the desired tolerances in the literature, particularly on trails on weekends, but closer to the tolerances found in the literature on trails on weekdays and on river, both weekends and weekdays (Whittaker and Shelby 2007).

Impacts of eliminating roadside parking at Burrells Ford (between the Ellicott Rock and Rock Gorge reaches), coupled with enforcement, is the same as Alternative 2.

Rock Gorge Reach: Average daily encounters on trails are expected to exceed the limit on 24 days per year on some weekend days June - August and some weekdays June - August. On-river encounters are very low and are not expected to reach the encounter limits in the foreseeable future (Berger and CRC 2007).

Nicholson Fields Reach: Average daily encounters on trails are expected to exceed the limit on 47 days per year on some weekend days April - August and November and on some weekdays April - August. On-river encounter limits are expected to be exceeded on ten days per year on some weekends March - May and November - December (Berger and CRC 2007).

Table 3.3-6 summarizes the average number of daily encounters among existing backcountry users and the number of days per year the established encounter limits are expected to be exceeded by these same users (see Appendix D and the project file for more on how these numbers were estimated).

Table 3.3-6. Estimated Contribution Of Existing Backcountry Users To The Number Of Backcountry Encounters In Alternative 3

Reach	Average # of on-trail encounters per day in an average year	Average # of days on-trail encounter limits are exceeded in an average year	Average # of on-river encounters per day in an average year	Average # of days on-river encounter limits are exceeded in an average year
Chattooga Cliffs	1.6	14	0.2	0
Ellicott Rock	2.9	36	0.6	0
Rock Gorge	4.9	24	0.5	0
Nicholson Fields	6.5	47	2.1	10

The average number of daily encounters per year in Table 3.3-6 is another way of broadly depicting the existing level of solitude in each of the reaches over a year, both on trail and on river (this is also depicted in Tables 3.3-4 and 3.3-5). The Chattooga Cliffs has the lowest on-trail and on-river encounter rate per day signifying the lowest use/encounters, while Nicholson Fields has the highest signifying that it has the highest use/encounters of the four reaches.

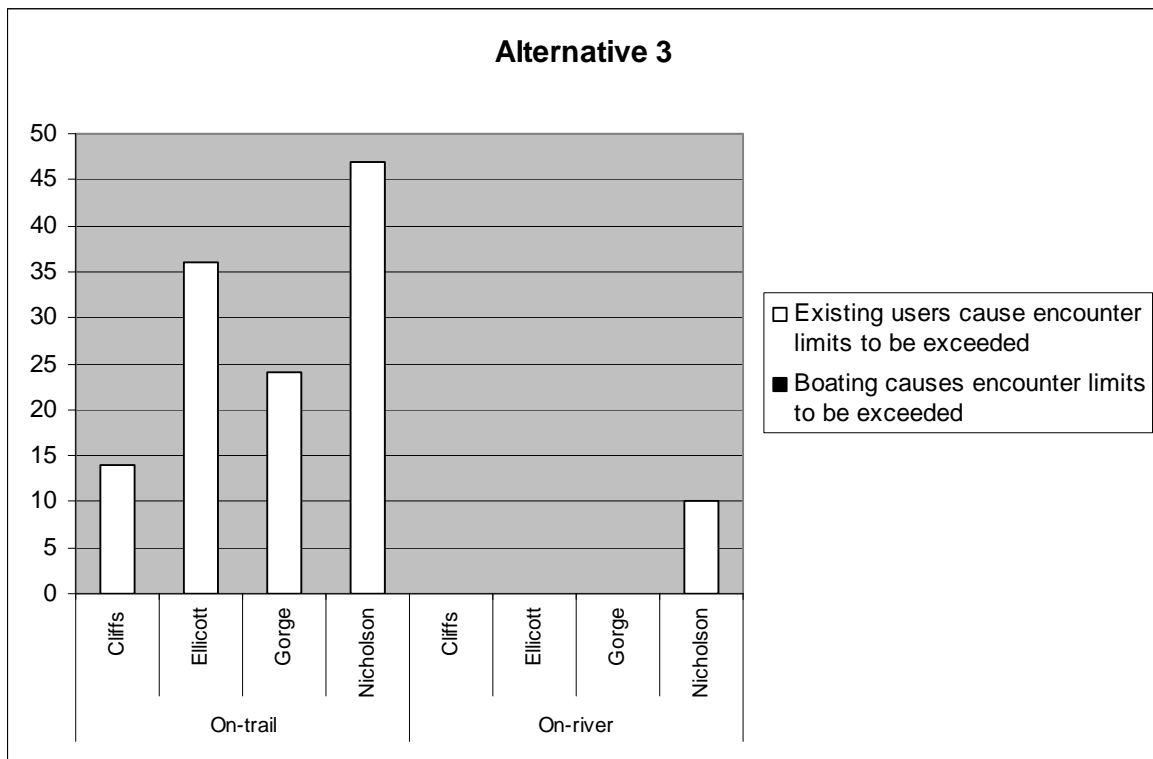
Under Alternative 3, opportunities to enhance solitude, remote experiences and the wilderness character are greater than in Alternative 1 (due to the encounter limits), but less than Alternative 2. Similar to Alternative 1, the solitude experiences of existing backcountry users are already being diminished during high use times of the year and in certain locations. As shown in Table 3.3-6, this is occurring mostly on trails on the lower three reaches (including Ellicott Rock Wilderness) and on river in the Nicholson Fields Reach. This could lead to some slight erosion of solitude on the highest use days, and may cause more use to shift to the lower use times of the year, or may displace some users from the river altogether before the agency takes action. In contrast, opportunities for experiencing solitude on river in the three upper reaches (including the Ellicott Rock Wilderness) and on trails in the Chattooga Cliffs Reach are excellent [in the three encounters and under (≤ 3) category (see Tables 3.3-4 and 3.3-5)]. It is important that these

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solitude experiences be preserved to continue offering a unique year-round backcountry angling opportunity on the upper Chattooga.

On-trail encounter limits on all four reaches and the on-river encounter limits for Nicholson Fields may be exceeded on several days in recent “average” years (see Figure 3.3-1), but the analysis suggests they have not been exceeded for more than 20% of days in a year [for example, in the highest encounter segment (Nicholson Fields), current on-trail encounters exceed limits about 47 days or 13% of the year]. At this encounter level, actions to reduce encounters are not currently needed to achieve the desired levels of solitude and quality recreation experience defined in this alternative. This in turn ensures that both the Chattooga River’s recreation ORV, and in particular its solitude component, are being “protected and enhanced,” and the “outstanding opportunities for solitude” in the Ellicott Rock Wilderness are being preserved at the desired levels for this alternative.

Figure 3.3-1. Estimated Number Of Days Per Year On-Trail And On-River Encounters From Existing Users And Boaters Are Likely To Exceed Encounter Limits By Reach For Alternative 3.



Closing unsustainable campsites and rehabilitating remaining campsites would enhance perceptions of solitude and remoteness more than Alternative 1, but not as much as Alternative 2. In addition, the amount of campsite use from backpackers may be reduced due to the requirement to camp at designated sites by reservation only.

Additionally, this alternative emphasizes a designated trail system, not to the degree of Alternative 2, but improved from Alternative 1 in terms of enhancing perceptions of solitude and

remoteness. As in Alternative 2, closing, rehabilitating and redesigning some trails would help enhance the desired perceptions of solitude and remoteness.

Given the information on future trends among existing and potential uses provided earlier in this section, over time use/demand will start to impinge on the encounter limits during the higher use times of the year. Some use/demand will begin to shift into the lower use times of the year spreading use/demand more evenly over the course of the year. However, this will not occur as quickly and immediately as in Alternative 2 and, unlike Alternative 1, encounters in Alternative 3 would be limited at existing levels to maintain current experiences.

For the immediate future, competition for fishable water would be the same as Alternative 1, except possibly in the Nicholson's Fields reach where, if trends continue, encounter limits could be reached and require management actions. These actions would be indirect, followed by direct measures to reduce encounters below the established limits in the Nicholson Fields reach. New campsite restrictions would likely increase competition for campsites more than alternatives 1 and 2 (encounter levels in Alternative 2 are lower than Alternative 3; lower encounter levels lead to less users which, in turn, equates to less competition for resources). New parking restrictions in Alternative 3 would likely increase competition for parking. In general, given recreation trend information, competition for resources is likely to increase.

Conflict: Goal interference for existing users and opportunities foregone for boaters, along with the resulting conflict, are the same as Alternative 1 and 2.

Recreation Opportunities: Recreation opportunities for boaters and existing users are the same as Alternative 1.

Cumulative Effects

Cumulative effects are the same as in alternatives 1 and 2.

Alternative 4

Direct and Indirect Effects

This alternative maintains current encounter levels in the upper Chattooga River corridor and address social carrying capacity in the same way as Alternative 3 while providing some boating on the main stem Chattooga. Boating is only allowed when it is very likely that boaters will not encounter any other river users (especially anglers on river, where existing encounter levels are very low and where asymmetric impacts are most likely) to preserve the unique year-round backcountry angling opportunities, an important component of which is on-river solitude. Separation would be accomplished by limiting boating by flow [to approximately 450 cubic feet per second (cfs) or higher at Burrells Ford], by season (between December 1 and March 1) and by zoning (from the confluence of Norton Mill Creek south to Burrells Ford Bridge). The upper end of the optimal flow range for bait angling on the upper Chattooga (and near the upper end of the acceptable range for fly and spin angling) occurs at levels of approximately 450 cfs (see Table 3.3-3). Additionally, 450 cfs is near the bottom end (within 100 cfs) of the optimal range

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for whitewater boating opportunities. Therefore, the 450 cfs minimum flow restriction for boaters makes it much less likely that anglers would be present when boaters are on the water and vice versa (Whittaker and Shelby 2007). Flow levels of approximately 450 cfs occur during the designated season on six days in an average year (Hansen 2007). Using data from the last 67 years, the number of boatable days in this alternative would range from a low of zero to a high of 11 (Hansen 2007). See Appendix C for terminology definitions.

Social Carrying Capacity/Solitude: Existing backcountry users exceed the on-trail and on-river encounters per day limits to the same extent as in Alternative 3 since the same encounter limits are used in both alternatives (see Table 3.3-6). Given the minimum flow, zoning, and seasonal use restrictions on boating, the effects of adding boaters to the mix (which are additive to existing user impacts) is summarized in Table 3.3-7.

Table 3.3-7. Estimated Effects Of Adding Whitewater Boating To The Number Of Backcountry Encounters In Alternative 4.

Reach	Average # of add'l on-trail encounters on an average of 6 days/year	Average # of days on-trail encounter limits will be exceeded due to boating on an average of 6 days/year	Average # of add'l on-river encounters on an average of 6 days/year	Average # of days on-river encounter limits will be exceeded due to boating on an average of 6 days/year
Chattooga Cliffs	0.5	0	1.7	0
Ellicott Rock	1.5	0	4.7	1
Rock Gorge	0	0	0	0
Nicholson Fields	0	0	0	0

As depicted in Table 3.3-7, only two reaches are affected by boating on an average of six days per year between December 1 and March 1 because of the limitations on boating (flow, zoning and season) in this alternative. Average number of daily encounters generated by boaters is lowest on trails (and in the Chattooga Cliffs in particular) and highest on river (in the Ellicott Rock reach in particular). This is due in part to the assumption that a greater percentage of boaters (75% of boating groups per day) would be encountered by on-river recreationists (as opposed to a much smaller percentage by on-trail recreationists), and the greater popularity expected among boaters for the Ellicott Rock reach (Whittaker and Shelby 2007). Angler/boater on-river encounters are among the most important impacts associated with allowing boating use on the upper Chattooga River. When they occur, these encounters are likely to be asymmetrical—adverse for backcountry anglers, but less so for boaters (Whittaker and Shelby 2007).

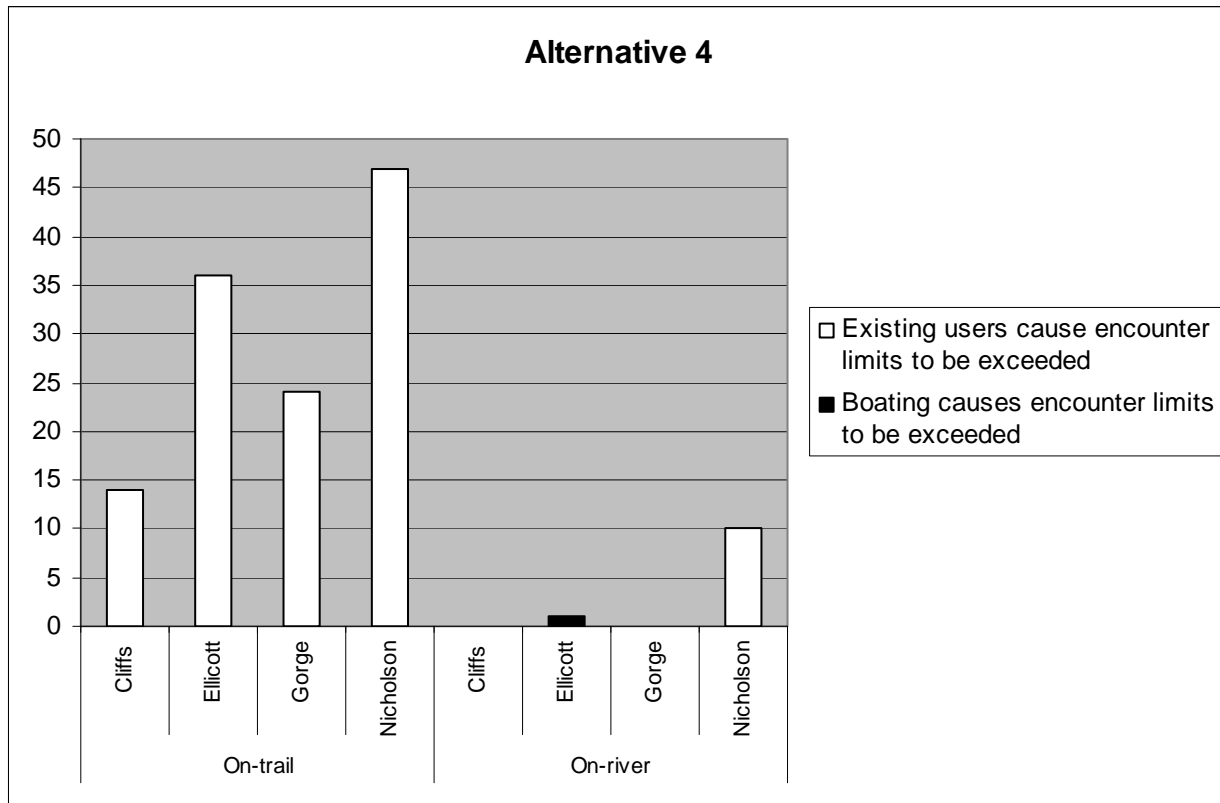
However, Table 3.3-7 also shows that boaters do not contribute to exceeding on-trail encounter limits, and are expected to contribute one day towards exceeding on-river encounter limits in the Ellicott Rock reach on an average of six days per year. Because of the limitations on boating (flow, zoning and season) in this alternative, boaters are expected to be a small contributor to on-trail and on-river encounters thereby preserving the unique year-round backcountry angling opportunities on the upper Chattooga, a critical ingredient of which is on-river solitude.

When boater impacts are combined with the impacts from existing users (Figure 3.3-2), the analysis suggests that none of the reaches are expected to exceed the specified on-trail or on-river encounter limits on more than 20% of days in a year (the closest is Nicholson Fields reach

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on trails, presently estimated to be at 13% or 47 days independent of boating). At these encounter levels, actions to reduce encounters are not currently needed to achieve the desired levels of solitude and quality recreation experience defined in this alternative. These encounter levels ensure that both the Chattooga River's recreation ORV, and in particular its solitude component, are being "protected and enhanced," and the "outstanding opportunities for solitude" in the Ellicott Rock Wilderness are being preserved at the desired levels for this alternative.

Figure 3.3-2. Estimated Number Of Days Per Year On-Trail And On-River Encounters From Existing Users And Boaters Are Likely To Exceed Encounter Limits By Reach For Alternative 4.



Under Alternative 4, opportunities to enhance solitude, remote experiences and the wilderness character are almost identical to Alternative 3. The main difference is that existing users might encounter boaters on trail or on river on an average of six days per year between December 1 and March 1 at flows of 450 cfs or higher.

Impacts of parking restrictions are the same as Alternative 1.

Dispersed campsite management and trail management are the same as in Alternative 3. Also as in Alternative 3, more trails and campsites would be in better condition than current management, would conform better to the landscape, and would be environmentally sustainable thereby helping to enhance perceptions of solitude and remoteness.

Under Alternative 4, boating has the potential of creating new portage trails and user-created trails to attraction sites unique to boating, which may slightly influence the perception of